

**IN THE CLAIMS:**

Please cancel claims 1-40 and add new claims 41-90 as follows.

Claims 1-40. (Canceled)

41. (New) A method for transmitting data messages between a first communication device and a second communication device that exchange voice messages over a communication channel, the method comprising:

establishing a communication session between the first and second devices over the communication channel;

transmitting digital data from the first device to the second device during the establishing step; and

exchanging voice messages between the first and second device over the communication channel during the communication session,

wherein the digital data includes a sequence of unique signals comprising a predetermined number of basic signals each having a fixed frequency and a unique amplitude.

42. (New) The method of claim 41, wherein establishing the communication session includes:

sending a dialing signal from the first device to the second device over the communication channel; and

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transmitting the digital data from the first device to the second device when sending the dialing signal.

43. (New) The method of claim 41, wherein the digital data includes at least one of application program code, identification data corresponding to at least one of the first and second devices, digital payment information, and cryptographic authentication information.

44. (New) The method of claim 41, wherein transmitting includes:  
transmitting digital data from the first device to the second device during idle periods where no voice messages are exchanged between the first and second devices.

45. (New) The method of claim 41, wherein establishing a communication session includes:

determining frequency characteristics of the communication channel; and  
determining the amplitude for each basic signal based on the channel's frequency characteristics.

46. (New) The method of claim 41, wherein establishing a communication session includes:

determining the amplitude of each basic signal based on acoustic characteristics of a human ear.

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47. (New) The method of claim 41, wherein establishing a communication session includes:

sending an identifying message from the first device to the second device including an identifier related to a characteristic of the communication session.

48. (New) The method of claim 47, wherein the identifier reflects a set of frequencies corresponding to the fixed frequencies of each basic signal.

49. (New) The method of claim 47, wherein the identifier identifies a first set of frequencies that are used by the first device and a second set of frequencies that are used by the second device when transmitting the digital data during the communication session.

50. (New) The method of claim 47, wherein the identifier reflects a fixed time period corresponding to at least one set of basic signals that are transmitted with the digital data.

51. (New) The method of claim 41, wherein each unique signal includes a set of the basic signals and transmitting the digital data includes:

transmitting the unique signals in a sequence during a corresponding sequence of fixed time periods.

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52. (New) The method of claim 51, further comprising:  
decoding, at the second device, the sequence of unique signals into a sequence of basic data units that form the digital data.

53. (New) The method of claim 41, wherein the communication channel has a noise level and each of the unique amplitudes is within a predetermined range above the noise level.

54. (New) The method of claim 53, wherein the predetermined range is slightly above the noise level of the communication channel.

55. (New) The method of claim 41, wherein the second device includes a telephone receiver for receiving the voice messages, the method further comprising:  
filtering the basic signals, at the second device, to prevent the digital data from reaching the telephone receiver.

56. (New) A system for transmitting data messages comprising:  
a first device;  
a second device; and  
a communications channel interconnecting the first and second devices for exchanging voice messages between the first and second devices,  
wherein the first and second devices are configured to establish a communication session over the communication channel, exchange voice messages

over the communication channel during the communication session, and transmit digital data over the communication channel, the digital data including a sequence of unique signals comprising a predetermined number of basic signals each having a fixed frequency and a unique amplitude.

57. (New) The system of claim 56, wherein the first device is configured to send a dialing signal to the second device over the communication channel when establishing the communication session and to transmit the digital data to the second device when sending the dialing signal.

58. (New) The system of claim 56, wherein the digital data includes at least one of application program code, identification data corresponding to at least one of the first and second devices, digital payment information, and cryptographic authentication information.

59. (New) The system of claim 56, wherein at least one of the first and second devices are configured to transmit the digital data over the communication channel during idle periods where no voice messages are exchanged between the first and second devices.

60. (New) The system of claim 56, wherein at least one of the first and second devices are configured to determine frequency characteristics of the communication

channel and determine the amplitude for each basic signal based on the channel's frequency characteristics.

61. (New) The system of claim 56, wherein at least one of the first and second device are configured to determine the amplitude of each basic signal based on acoustic characteristics of a human ear.

62. (New) The system of claim 56, wherein at least one of the first and second devices are configured to send an identifying message over the communication channel including an identifier related to a characteristic of the communication session.

63. (New) The system of claim 62, wherein the identifier reflects a set of frequencies corresponding to the fixed frequencies of each basic signal.

64. (New) The system of claim 62, wherein the identifier identifies a first set of frequencies that are used by the first device and a second set of frequencies that are used by the second device when transmitting the digital data over the communication channel.

65. (New) The system of claim 62, wherein the identifier reflects a fixed time period corresponding to at least one set of basic signals that are transmitted with the digital data.

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66. (New) The system of claim 56, wherein each unique signal includes a set of the basic signals and at least one of the first and second devices are configured to transmit the unique signals in a sequence during a corresponding sequence of fixed time periods when transmitting the digital data.

67. (New) The system of claim 66, wherein at least one of the first and second devices are configured to decode the sequence of unique signals into a sequence of basic data units that form the digital data transmitted over the communication channel.

68. (New) The system of claim 56, wherein the communication channel has a noise level and each of the unique amplitudes is within a predetermined range above the noise level.

69. (New) The system of claim 68, wherein the predetermined range is slightly above the noise level of the communication channel.

70. (New) The system of claim 56, wherein the first and second devices each includes a telephone receiver for receiving the voice messages exchanged on the communication channel and a filter for filtering the basic signals transmitted with the digital data to prevent the digital data from reaching the telephone receiver.

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71. (New) A method for transmitting data messages between devices configured to exchange voice messages over a communications channel, the method comprising:

encoding a data message into an arrangement of signals;

transmitting the signals over the communications channel from a first one of the devices to a second one of the devices while the communications channel is configured to exchange voice messages;

decoding the signals into the data message; and

executing a program either indicated by or included in the data message.

72. (New) A method for receiving a data message transmitted by a remote device over a communication channel that is used to exchange voice messages, the method comprising:

receiving the data message transmitted from the remote device over the communication channel as a sequence of the basic signals during a sequence of fixed time periods, wherein the data message is transmitted by the remote device during a period when the communication channel is available for exchanging the voice messages;

decoding the data message to obtain digital data; and

processing the digital data based on a corresponding type determined from the digital data.

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73. The method of claim 72, wherein the digital data includes at least one of application program code, identification data corresponding to at least the remote device, digital payment information, and cryptographic authentication information.

74. (New) A method for transmitting a data message to a remote device over a communication channel that is used to exchange voice messages, the method comprising:

configuring the data message as digital data including a sequence of basic signals; and

transmitting the data message to the remote device over the communication channel as a sequence of the basic signals during a sequence of time periods, wherein the data message is transmitted during a period when the communication channel is available for exchanging the voice messages,

wherein the remote device decodes the data message to obtain the digital data; and processes the digital data based on a corresponding type determined from the digital data.

75. (New) The method of claim 74, wherein the digital data includes at least one of application program code, identification data corresponding to at least the remote device, digital payment information, and cryptographic authentication information.

76. (New) A computer-readable medium including instructions for performing a method, when executed by a processor, for transmitting data messages between a

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first communication device and a second communication device that exchange voice messages over a communication channel, the method comprising:

establishing a communication session between the first and second devices over the communication channel;

transmitting digital data from the first device to the second device during the establishing step; and

exchanging voice messages between the first and second device over the communication channel during the communication session,

wherein the digital data includes a sequence of unique signals comprising a predetermined number of basic signals each having a fixed frequency and a unique amplitude.

77. (New) The computer-readable medium of claim 76, wherein establishing the communication session includes:

sending a dialing signal from the first device to the second device over the communication channel; and

transmitting the digital data from the first device to the second device when sending the dialing signal.

78. (New) The computer-readable medium of claim 76, wherein the digital data includes at least one of application program code, identification data corresponding to at least one of the first and second devices, digital payment information, and cryptographic authentication information.

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79. (New) The computer-readable medium of claim 76, wherein transmitting includes:

transmitting digital data from the first device to the second device during idle periods where no voice messages are exchanged between the first and second devices.

80. (New) The computer-readable medium of claim 76, wherein establishing a communication session includes:

determining frequency characteristics of the communication channel; and  
determining the amplitude for each basic signal based on the channel's frequency characteristics.

81. (New) The computer-readable medium of claim 76, wherein establishing a communication session includes:

determining the amplitude of each basic signal based on acoustic characteristics of a human ear.

82. (New) The computer-readable medium of claim 76, wherein establishing a communication session includes:

sending an identifying message from the first device to the second device including an identifier related to a characteristic of the communication session.

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83. (New) The computer-readable medium of claim 82, wherein the identifier reflects a set of frequencies corresponding to the fixed frequencies of each basic signal.

84. (New) The computer-readable medium of claim 82, wherein the identifier identifies a first set of frequencies that are used by the first device and a second set of frequencies that are used by the second device when transmitting the digital data during the communication session.

85. (New) The computer-readable medium of claim 82, wherein the identifier reflects a fixed time period corresponding to at least one set of basic signals that are transmitted with the digital data.

86. (New) The computer-readable medium of claim 76, wherein each unique signal includes a set of the basic signals and transmitting the digital data includes:

transmitting the unique signals in a sequence during a corresponding sequence of fixed time periods.

87. (New) The computer-readable medium of claim 86, further comprising:  
decoding, at the second device, the sequence of unique signals into a sequence of basic data units that form the digital data.

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88. (New) The computer-readable medium of claim 76, wherein the communication channel has a noise level and each of the unique amplitudes is within a predetermined range above the noise level.

89. (New) The computer-readable medium of claim 88, wherein the predetermined range is slightly above the noise level of the communication channel.

90. (New) The computer-readable medium of claim 76, wherein the second device includes a telephone receiver for receiving the voice messages, the method further comprising:

filtering the basic signals, at the second device, to prevent the digital data from reaching the telephone receiver.

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